A few safeguards allow you to take gravel without damaging the stream or nearby property.

Mining Gravel and Protecting Streams

by Bill Turner and Mike Roell

Owners of streamside land have always faced flooding and erosion due to natural events, but damages caused by in-stream mining should not be an additional threat to personal property.

More than 500 in-stream mining sites exist in Missouri. Considering the potential harm any one gravel mining operation can cause, it is important that gravel mining occur only with proper safeguards.

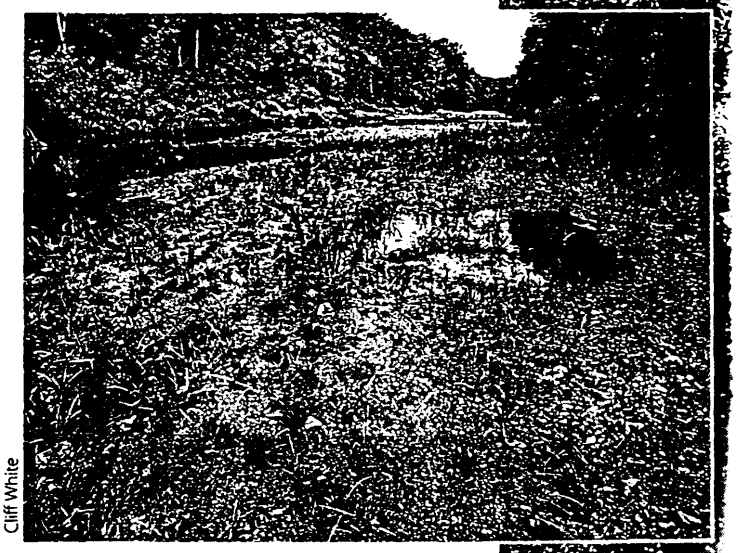
Missouri's streams are vulnerable to huge problems caused by gravel mining. These waterways have formed within their valleys over thousands of years. During this period, the stream meandered across its flood plain. Because this movement of the stream channel happens very slowly over many years, natural erosion occurs at a rate to which the stream can adjust.

The characteristics of a given stream are not formed on hot summer days when there is little water flowing in the channel. Instead, our streams are carved out during periods when the stream channel is flowing at least half full. During high flow, the water has enough power to cause changes.

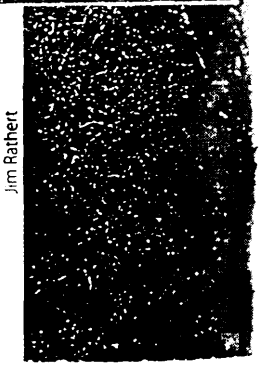
Streams are a series of alternating deep areas called pools and shallow areas called riffles. Riffles are high areas of the stream bottom that control the slope of the stream. It's because riffles help control the slope of the stream that they work to control erosion.

Generally speaking, erosion occurs on outside bends and silt, sand and gravel deposition occurs on the inside bends. This process produces the sinewy characteristics that we are accustomed to seeing as we float, fish or swim in our favorite stream.

Gravel mining often results in piles or pits that, during high water events, can rapidly increase the erosive process in streams.



Cliff White



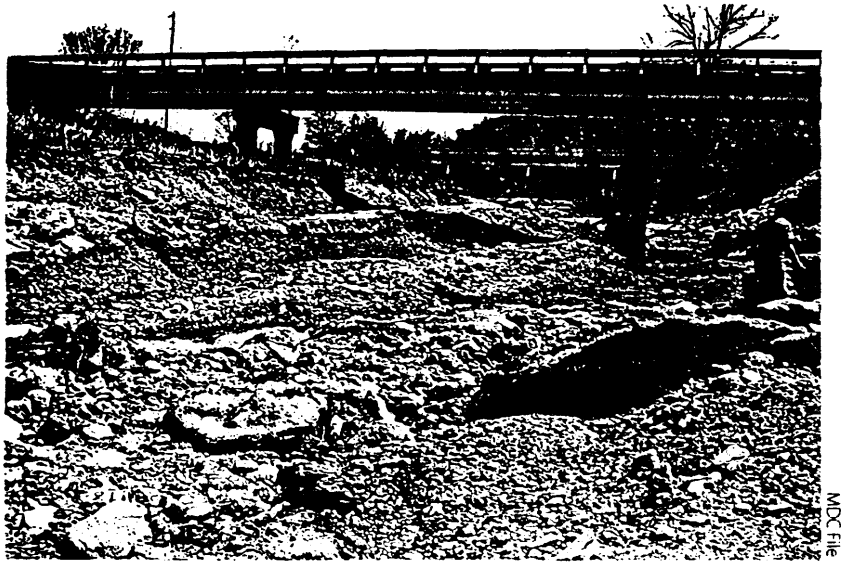
Jim Rathert

Gravel mining has the potential to completely alter a stream bed (right). Current mining guidelines minimize stream bed erosion and allow gravel bars to recover naturally (above).

October 2

MDC File

MDC File



MDC File

Indiscriminate gravel mining on Linn Creek produced a headcut (top) that migrated upstream, deepening and widening the channel (middle) and causing nearly a million dollars of damage to public and private property (bottom).

Although many of our streams have plenty of gravel to spare, we also have many streams which cannot afford to have gravel removed from them. To ensure you are mining from a stream that has ample gravel, look for some key characteristics. Streams with excess gravel generally have gravel bars with little or no vegetation growing on them. The rocks are generally small (less than three inches in diameter) and are loosely packed.

Gravel bars that are vegetated or where the rocks are tightly packed (not easily loosened when kicked) are characteristic of healthy streams with just the right amount of gravel. These should not be disturbed.

When practical, rock aggregate should be acquired from non-stream sources such as nearby rock quarries, but if you must remove sand or gravel from a stream or its flood plain, at least do it in ways that will not damage your property or your neighbor's property.

Without a doubt, the worst damage caused by gravel mining is the extensive erosion that results when the mining operation makes the slope of the stream channel steeper than it was before mining. When a stream channel is made steeper, the water flows faster; and the faster it flows, the more power it has to cause erosion. In these situations, the bottom of the stream channel erodes away first, and then the stream banks fall in and wash away.

If the gravel mine is a pit dug in the stream channel and the miner continues to take gravel over a long period of time, the erosion can move far upstream and cause extensive property damage to many streamside landowners. Because of these potential problems, gravel should never be mined deeper than the water elevation at the time of removal. If the stream channel is dry, mining should not be deeper than the elevation of the stream bottom at the site. If you don't mine too deep, the natural slope of the channel will not steepen, and the risk of serious erosion damage to neighbors will be reduced.

Gravel should never be removed from riffles because breaking up the riffle threatens channel stability and important habitats for fish and other aquatic life.

Gravel miners need to get their equipment through the stream corridor and into the stream channel, but the wooded corridor along the stream protects the waterways and, itself, needs to be protected. This forested area slows erosion, filters excess nutrients and sediments, baffles powerful flood flows and provides important habitat for aquatic and terrestrial plants and animals. It also protects the waterway from our other activities in the flood plain and watershed and keeps stream temperatures cooler with its shade.

When mining gravel, maintain an undisturbed buffer at least 50 feet wide at the top of the high bank and that extends for the length of the excavation site. Construct access points

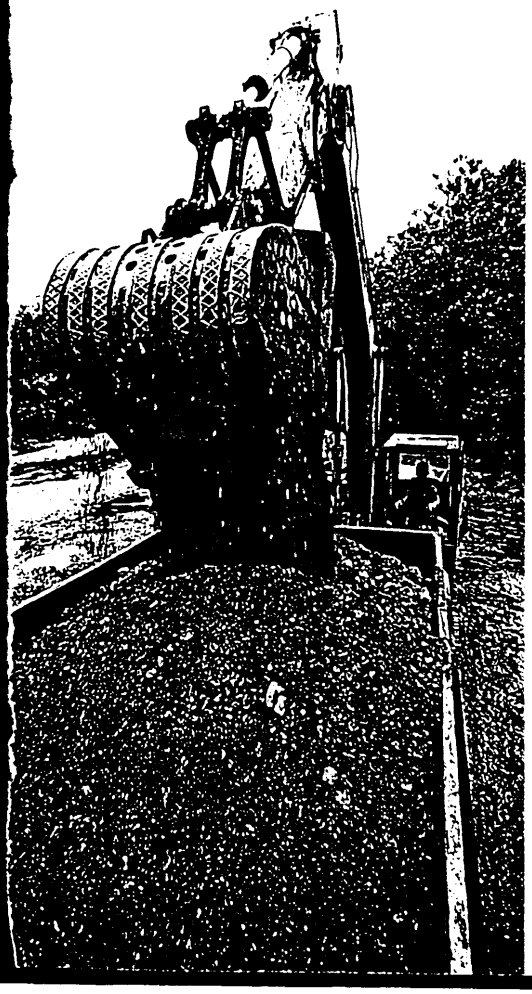
from the high bank into the channel to minimize erosion of both the access road and stream banks. Make sure you replant areas disturbed for access once excavation is complete.

It's also important to leave a 20-foot wide buffer from which mining equipment is restricted between the mined area and stream bank vegetation. Keeping mining equipment out of this area assures that the stream will not change its course as a result of the mining. It will also prevent eroded material from causing siltation problems downstream and will protect the roots of plants that prevent bank erosion.

When gravel mining, never relocate or straighten stream channels. Doing so can cause instability that leads to excessive erosion of the streambed and banks.

Gravel mining is important to many Missourians, but so is the health and integrity of our native streams. The departments of Conservation and Natural Resources and the U.S. Army Corps of Engineers have worked with mining industry representatives to develop gravel mining procedures that do not threaten stream life or damage streamside property.

Once mining is finished, unused material should be returned to the removal site and smoothed to mimic the original contours of the bar. Unused material should not be stockpiled in the channel, placed against the stream banks or deposited in a stream side wetland. Stockpiling material in the channel obstructs high stream flow, which can increase stream bank erosion. Pushing material against stream banks may actually increase erosion at the site. Remember, any sand, gravel, silt or other sediment eroded from one place will deposit somewhere else and may cause you or your neighbor serious problems.



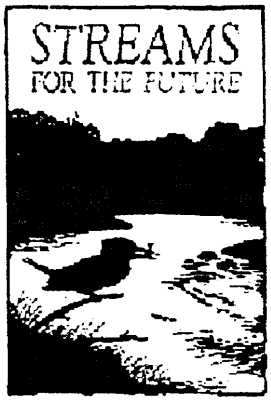
Water quality is always a primary concern, so fuel, oil and other wastes should not be stored in the channel. Sudden high flows from rain storms may cause spills.

Fish, macro-invertebrates and other stream creatures rely heavily on the stream bottom to maintain healthy populations. The stream bottom provides food, spawning habitat, a place to protect eggs, nursery habitat and shelter from predators. It only makes sense that gravel mining can be harmful to these stream dwellers.

The smallest particles of sand and soil carried by a stream are called "fines." This is what makes a stream look muddy after a heavy rain. Normally, these fines settle as the water level in the stream falls after a rain and no harm comes from their presence. If we do something to cause an excessive amount of fines, then the water remains muddy and the bottom may become covered with this silt, causing many problems for fish and other aquatic life. We can prevent some of the risk by avoiding mining during the spawning season.

A common practice in gravel mining is to wash the gravel to remove these fines. Sand and gravel washing as well as gravel crushing and sorting should occur far enough away from the channel so that the warm, stagnant, silty wash water cannot enter the stream. This will protect water quality and prevent sedimentation (silting) of important stream bed habitats.

Using proper techniques and safeguards, it's possible to excavate sand and gravel without increasing erosion and with little or no damage to important habitats of aquatic plants and animals. If you have questions about proper ways to excavate sand and gravel from stream channels contact the Missouri Department of Conservation for guidance and a free brochure. ▲



The "Streams for the Future" program makes it possible for every Missourian to help protect our streams and rivers. For more information, write:

STREAMS FOR THE FUTURE
FISHERIES DIVISION
MISSOURI DEPARTMENT OF CONSERVATION
BOX 180
JEFFERSON CITY, MO 65102
573/751-4115

The health of Missouri streams depends on you, the landowner. Remember that sand and gravel removal can cause stream problems. Please follow these guidelines when sand or gravel removal is necessary. If you would like advice with your gravel removal decisions, contact your nearest Fisheries Division office or any Missouri Department of Conservation employee for the location of the Fisheries office near you.

Compiled and designed by: Sherry Fischer

FIS607

5/92

Last Revision Date: 07/07/97

Sand and Gravel Removal and Stream Health:

A Landowner's Guide

Sand and gravel can be good or bad news for Missouri landowners. Some use it to pave farm roads; others curse it for causing stream channel problems. However, we haven't always had large amounts of sand and gravel in many of our streams. Over the last century deep pools, stable stream banks and narrow stream channels slowly changed to shallow, wide, eroding streams; the "old swimming hole" was often buried under a mound of sand and gravel. Through it all, landowners tried to deal with these changes, many of which have caused problems.

What Caused Sand and Gravel Problems?

Much of the sand and gravel in Missouri streams came from changes that occurred on the Missouri landscape over a century ago. History reveals that dramatic watershed changes began to occur in the 1800's as large tracts of Ozark hardwood timber were harvested for lumber and railroad ties. In northern and western Missouri, prairie sod was plowed to feed a growing nation.

Farming efforts that followed these changes were characterized by poor soil conservation and left the ground unprotected. Burning, plowing and overgrazing of hillsides removed vegetation which held soils in place. Trees along stream banks were frequently cleared for more farmland. As these trees were removed, roots which formerly held stream banks in place decayed. Stream banks eroded faster and channel changes occurred more rapidly. Sand and gravel washed into Missouri streams.

What Can Landowners Do?

Today, we are still facing problems that began over a century ago. As landowners, you must work with unstable streams that erode stream banks and deposit sand and gravel on fields and other undesirable places during floods. Some actions landowners can take to save their valuable soil and farmlands are:

Practice good soil conservation. Good soil conservation not only keeps topsoil on agricultural fields where it belongs, but it also keeps it from being washed into streams and adding to the sand and gravel already there. Sound conservation plans should be developed and implemented for all your agricultural lands. Areas not used for agriculture should also demonstrate good soil conservation management. Consult your local Soil and Water Conservation District or the Soil Conservation Service for information and assistance in soil conservation planning.

Use stream bank stabilization structures. Excess gravel can cause stream bank erosion problems. Eroding stream banks should be fixed using approved stabilization structures. Dozing and packing sand and gravel on stream banks is not a good solution to stream bank erosion and can cause problems for downstream neighbors. Pushing loose sand and gravel against a stream bank makes these materials susceptible to being carried by flood waters and dropped where they are not wanted. While not all stream bank erosion problems are easily solved, Missouri Department of Conservation Fisheries personnel can assist you with many common stream bank erosion problems.

Maintain timbered buffer strips along streams. A strip of trees is necessary to filter sand and gravel and keep it from being dumped on bottomland fields. Streamside trees keep banks stable and, by slowing flood waters, cause sand and gravel carried by flood waters to drop out in this buffer strip rather than on bottomland fields. Consult your local Missouri Department of Conservation Forestry office for advice and information on planting and managing streamside trees.

Remove sand and gravel carefully. When done properly, sand and gravel can be removed with minimal harm to the stream and can allow you to use some of this material on your farm. However, removal does not address the causes of sand and gravel problems in the stream. It is important to remember that sand and gravel removal can create physical and economic problems for landowners above and below the removal area. If a removal technique is chosen, it should be conducted with the stream's stability in mind. You should consider the following steps to ensure minimal impacts to others and avoid damaging streams:

Restrict removal activities to sand and gravel bars that are loosely packed to avoid damage to the stream. Bars covered with larger-sized materials that are well packed or vegetated are usually stable and should not be disturbed. Missouri Department of Conservation, Fisheries Division personnel can help you find locations where gravel removal will minimize harm to the stream.

Remove gravel above the water line and leave a 2 foot buffer of undisturbed material between the normal water line and the excavation area.

Avoid removing sand and gravel within 25 feet of streamside vegetation. Vegetation holds gravel and soil, keeping bars and banks in place.

Use approved stream bank erosion structures and avoid channel straightening or packing sand and gravel on eroding stream banks.

When you finish, smooth the removal area to avoid stream bed erosion and other stream channel problems.

Avoid using vehicles and heavy equipment in the water. If you must cross the stream, drive vehicles at right angles to stream flow.

Sand and gravel removal should take place before March 15 and after June 15 to avoid harming spawning fish and their habitat.

Keep fuel, oil and other wastes out of the stream.

Do not remove gravel from riffles (shoals) because they prevent erosion of the stream bed. Riffles are very important to stream stability and are a major source of food and oxygen for aquatic life.

Do not wash sand or gravel in the stream channel to avoid polluting the water with sediment. If you must wash sand or gravel, use a settling basin and wash your material outside the stream.

Apply for the appropriate permits. Most stream work, including the above guidelines, requires permits from state and federal agencies. Be sure you comply with all applicable laws. Contact Missouri Department of Conservation Fisheries offices for assistance in applying for these permits.

Notes from the Instream Sand and Gravel Public Meeting
Meramec Regional Planning Commission
Stream Advisory Committee
Partnership for Stream Management at the Local Level
St. James, Missouri
November 27, 2001, 7 to 8 PM

Tom Cabanas had been invited by the Stream Advisory Committee out of their interest related to the proposed rules that would incorporate the Clean Water Commission stream protection guidelines into the implementation of the Land Reclamation Act in the permitting process of in stream sand and gravel commercial operations. Tom Cabanas and Larry Coen attended the public meeting. Land Reclamation Commissioner Jim DiPardo also attended.

There were at least 75 people present, about a third were members of the Meramec Regional Planning Commission and most of the rest were nearby interested landowners. A few county commissioners were present, along with Senator Sarah Steelman (R-16), Representative Bob May (R-149) and Representative Frank Barnitz (D-150).

Tom's presentation lasted about 20 minutes, and then there were at least 40 minutes of questions. The following were the main topics that were covered:

- Tom explained the rulemaking process, the history of the stream protection guidelines, the fact that our Commission asked the program to pursue this rulemaking. He then talked about the number of agencies and interested parties who were a part of the process that originally developed the stream protection guidelines. He also explained that this was an effort to regulate commercial mining operations and that private use extraction and local governments were exempt.

- He then explained that most operators incorporate these guidelines into their permits already, so that we are not proposing something new. However, if a company simply refuses to include these guidelines, we cannot force them to do so but enforcement action can still be taken through the department for damage to streams. Tom indicated however, that enforcement after the damage has occurred is a poor plan and that we would like to work with operators through these rules to prevent damage to streams from mining operations in the first place.

- We announced the dates and locations of the public meetings that will be held in December and that we would probably add another one for northern Missouri. We also explained that we will re-file the revised rule in January following a public hearing on the matter and the pubic comment period will be extended to 90 days from the standard 30-day period.

- We also discussed the fact there would be changes to the language in the proposed rule when we file it again, those changes being based upon comments receive to date and as a result of the public meetings.

- There was also mention from the audience that the fiscal statement in the September 17 filing in the Missouri Register was incorrect in that it listed no fiscal impact to private or government agencies. One county commission asserted that there would be a fiscal impact of the proposed rule based upon a statement made by a contractor that the new rule would increase his bid on a bridge job.

- The Planning Commission explained that they are looking for a way to work out a landowner and regulatory cooperative effort to manage steam issues at the local level. Landowners clearly expressed that they did not agree that a state agency could regulate their streams. Their property boundaries go to the center of a stream in many cases, and include the entire stream channel in other cases. Our explanation that this was a regulatory effort of commercial mining was to no avail to many landowners present.

- One county commissioner read from the Supreme Court decision rendered against the Corps of Engineers that cites that gravel mining has a deminimus impact on streams and that the COE is to cease and desist from the regulation of this industry. He cited the decision as 93-17-54. The commissioner then announced that we were violating the Supreme Court decision by attempting to perform this regulation.

- A lot of questions were then asked of us to explain what the future plans of the Clean Water Commission would be on the issues related to stream protection. When we attempted to explain that we could not speak for the Clean Water Commission, there were a number of comments from the audience expressing dissatisfaction that we came unprepared to discuss these issues. Other landowners then brought up questions about the Soil and Water Conservation Commission and their role in stream protection. Their annual conference is ongoing this week and landowners felt that the SWCC should also be a part of our rulemaking process.

- One question about the proposed rule was raised regarding the restriction of operations in "outstanding state resource waters". Priscilla Stotts, WPCP, who is a member of the Meramec advisory committee, answered this. We want to acknowledge that she was present and helped out on a few of the questions.

- There was some discussion about the Texas County Land Management Plan that apparently required notification to all county commissions regarding any issue that would affect them in an economic sense. The county commissions felt that we violated this agreement when we filed the proposed rules. We explained that we did not view it that way, since county commissions are exempt from this regulation, however that did not satisfy them.

- A number of landowners were very dissatisfied with the fact that they did not know about this proposed rulemaking ahead of time. Even though we did receive a number of comments, they felt that we should have taken the time to notify landowners across the state of the proposal, that landowners should have been a part of the process that developed these stream protection guidelines, and that basically we were not in touch with the issues of local citizens.

- We indicated that while we did file the rules up front without a lot of contact, these rules have been pulled, meetings have been scheduled and we will not file them again until we have listened to everyone who cares to comment at the public meetings. Senator Steelman requested that Scott Totten attend these meetings, since the guidelines originated with the Clean Water Commission and the concern of landowners is clearly the future intent of that Commission.

- Toward the end of the meeting, the attendees were beginning to understand the concept that our proposal would only regulate commercial miners, not landowners. However, because of the recent meetings related to TMDLs and the fact that these proposed rules are guidelines developed through the Clean Water Commission, landowners feel that it is only a matter of time before the Clean Water Commission proceeds to regulate landowners, even though our proposed rules do not make that effort. Landowners even cited the number of streams listed for sediment from gravel mining, as a concern to show that the Clean Water Commission is moving to regulate more private land.

- A number of landowners expressed that they want to be able to manage their own streams on their own land without regulatory involvement. As the meeting began to wind down, the general sentiment was that landowners were not really so concerned about regulatory efforts related to commercial operations, but many landowners who were present expressed a belief that the department has plans to impose regulations on landowners to take control of their streams away from them, probably through the Clean Water Commission.

Notes from the Instream Sand and Gravel Public Meeting
MDNR Geologic Survey and Resource Assessment Division
Rolla, Missouri
December 5, 2001, 6 to 8 PM

Attendees: MDNR staff included Larry Coen, Staff Director of the Land Reclamation Commission; Tom Cabanas, Mining Section Chief; Mike Larsen, Unit Chief Non-Coal and John Madras, Water Pollution Control Program

LRP Commission Members included Gerald Ross, Dept. of Conservation; Jim DiPardo, Vice Chairman; Mimi Garstang, Geological Survey and Resource Assessment Div.

Also see attached list of sign-ins.

1) **Introduction of meeting by Larry Coen**
2) **PowerPoint Presentation by Tom Cabanas**
3) **Public comment and question period:**

Comment: On Rule #8, cleaning of fines from sediment ponds. This operation on a daily basis is too expensive. Also, a water pollution permit should cover any discharges as long as it is in compliance with NPDES permit.

Response: As long as the NPDES permit is in compliance there should be no problem.

Comment: Operators are concerned about the number of different permits required by MDNR to run a small business. Several permits are needed just to do some work on your own land and creeks.

Comment: No specific language exists in rules that allow variances. Variances need to be written into the rules so that operators know that these are available.

Comment: The buffer zones are too wide for many small creeks.

Comment: Sometimes landowners want the creeks to be widened more than the conditions will allow by rule. Operators are often unwilling to do what the landowner wants because they feel that they cannot satisfy both the landowner and the state.

Response: Tom Cabanas explained that non-regulatory work could be done off permit for the landowner. Acknowledged this was a valid concern.

Comment: Landowners do not want MDNR on their property many times, so operators are forced to work silently or not at all.

Comment: Landowners need to have their creeks cleaned out because willows, sediment and gravel from up stream often choke the creeks. Choked streams will

eventually destroy adjacent farmland. Gravel removal from creeks has done no harm. There was a suggestion to pass law to repeal existing laws regulating sand & gravel operations. There was also a suggestion about attending the January Commission Hearing to express concerns.

Question: What about all the missing letters of invitation to the meetings.

Response: Tom Cabanas gave explanation of the problem, table database error.

Question: What about open pit sand and gravel mining?

Answer: These rules do not apply to open pit situations.

Question: Regarding number 9, can operators cross streams during spawning seasons?

Answer: Yes, as long as the crossing is at a specific location and at the same location each time.

Question: Is the spawning season rule a redundant rule? A discussion followed for clarity in the definition. Under the Land Reclamation permit, spawning restrictions should be followed... (but) removed from 404 "link".

Answer: Tom Cabanas explained the spawning rule basically states stay out of flowing water. Since the rule requires staying out of the water why have it? He concurred that it was probably redundant to have spawning restrictions included in proposed rules.

Question: As long as the operator stays above the water level, why do you need the buffer zone in #2?

Answer: This is just to insure that the flowing water is protected. Obviously, if the flowing water is not disturbed, this goal has been met. A buffer zone is just a clear and constant reminder of this concern.

Question: In regards to 25' requirement, where did this come from? Operator stated that 5' is sufficient and what he is doing now is causing no harm.

Comment: The buffer zone was an advisory from MDC and was not regulatory.

Response: John Madras explained the history of the GP-34 permit conditions and that the buffer zones of 20' were agreed to by a variety of people and professionals. It was a judgment call by an advisory group of industry, the public and public agencies. Exceptions have always been a part of the process.

Comment: The biggest problem is the overlap of agency oversight. Most Missouri streams are choked with gravel and need to be cleaned out.

Comment: The Missouri Farm Bureau and the Soil and Water Conservation Program have passed resolutions to address the accretion of gravel that is causing much soil loss from adjacent farmlands. A Farm Bureau representative stated that gravel removal could often help with soil erosion control.

Question: On #15, what is the definition of threatened and endangered species? No matter what permits are obtained, the USFS and the COE will close down any operation that disturbs what they believe to be endangered or threatened species.

Answer: Contact the Missouri Department of Conservation or the US Fish and Wildlife Service to determine upfront if endangered species are present in the stream where mining is occurring or will occur.

Comment: A comment was made that the width of buffer zone may increase in the future from it's present requirement to 30', 40' or more if these rules are passed.

Question: Where is common sense any more among state employees?

Answer: No answer provided.

Question: Why was the reference to off-road vehicles removed from the rule? Who can regulate the misuse of off-road vehicles?

Answer: Tom Cabanas explained that the Land Reclamation Commission could not enforce it and that is why it was taken out.

Comment: Raw sewage treatment plants seem to get away with everything, yet small sand and gravel operators are highly regulated.

Comment: Regulations are not written clearly enough. Operators and landowners are terrified of MNDR. MDNR should stay in Jefferson City.

Comment: Not every stream is the same. We should look at each stream individually. Some streams should be exempt from all these rules.

Comment: On spawning restrictions different fish have different seasons. The spawning rule is unnecessary since the requirement already exists to stay out of the water.

Question: Who did the impact of economics? $500 is very low. Just on state projects, we can expect to add $8 to $10 per cubic yard of concrete will be added to the costs. Travis Morrison stated that the cost of aggregate is increasing as a result of these rules. They do have significant economic impact.

General discussion: Complaints were made that the department has given the impression that it believes itself to be more informed than the landowners, etc. on the issues at hand.

Comment: Property owners do not want to hurt their own property. They will not let contractors and operators hurt their property either.

Question: Why are we doing these rules? Fish populations have actually declined because gravel is choking the creeks out.

Answer: Tom Cabanas explained the reasons for the new rules.

Question: Why not deal with bad operators and leave good operators alone?

Answer: Rules in all areas of government must apply to all to be fair.

Question: Creeks that are choked with gravel cause more problems than cleaned out creeks. Why is it wrong procedure to push gravel up on the banks? People want to know what the purpose is to the rules.

Answer: This may not be wrong. However our state mining law does not provide for that activity. Only the Corps of Engineers can issue a permit to alter the stream banks in that way. If a landowner works with the Corps, this can be accomplished through their process.

Question: Why are new rules needed since existing rules are already in place?

Response: Tom Cabanas gave an explanation of the preamble to the law, balancing the needs of industry with other societal interests, i.e., environment, property, dollars. Also, explained the rules are basically at work now in existing permits. Old permits are difficult to change and these rules (proposed) apply to new permits.

Question: How many agencies are involved in the rule making process?

Response: Tom Cabanas reiterated that the LRP does not oppose gravel removal. However, the LRP supported such removal be done in a responsible way. Agencies involved were a number of people including MDC, Corps, Water Pollution Control, etc.

Comment: Concern expressed that the landowners were not included in the development of the guidelines and that they should be included. Suggestion to bring average landowner into the process of writing these rules.

Question: Forrest service lands are not mined and are in worse condition than private lands. Why doesn't MDNR focus its efforts on those lands and leave small businesses and landowners alone?

Answer: The Land Reclamation Act directs our program to regulate mining. We must focus on that and not on other issues outside our jurisdiction.

Farm Bureau Question: Stream bank erosion was discussed. There is a crossover between gravel operators and landowners. Landowners want to stop stream bank erosion. What the landowners want and what can be done are at odds. Willow trees were mentioned in regards to problem in the rule that specifies staying away from woody vegetation. This hinders flood control. "Willow bars" are a problem. Also, is LRP willing to modify the 20' buffer rule?

Response: Tom Cabanas stated yes after discussion with all concerned.

Comment: Operators have a difficult time mining and protecting the stream at the same time.

Comment: Travis Morrison stated pushing gravel onto creek banks was a federal agency/Corps issue.

Question: Can existing permits be followed without worrying about these new rules?

Answer: Most of the current permits already have stream protection measures in them and may certainly be followed just as they are. For the few permits that do not have stream protection measures identified, this will be covered when the permit is due for renewal.

Question: How many agencies are involved in sand and gravel permits?

Answer: The MDNR Land Reclamation Program and Water Pollution Control Program are both involved. In specific cases where damage to the stream has occurred, the Missouri Department of Conservation, the US Fish and Wildlife Service and the Corps of Engineers could all become part of the restoration process.

Question: Why weren't other agencies that participated in drafting the guidelines not present at the meeting? (The other agencies were represented)

Response: Senator Steelman's office representative stated that 'People were confused and are still confused'

Comment: The Land Reclamation Commission is trying to have a positive impact on streambank erosion. The Commission should look at a work group to rewrite these 15 new proposed conditions.

Comment: Each inspector from MDNR needs to represent all of MDNR. Operators don't want to have to deal with some many different people.

Comment: Landowners want to stop streambank erosion. However, each different program in MDNR has different rules. All together these rules are confusing and landowners don't know which rule should be the one to follow.

Question: Would we be willing to modify the 20-foot buffer zone rule?

Answer: **Yes.**

Question: Can MDNR work with all agencies and the public and industry to get a better set of rules?

Answer: We are doing that now through the public meeting and hearing process. The Land Reclamation Commission will ultimately decide how this process is completed.

Comment: On #4, there are regional differences to streams. Some streams do not experience headcutting, and some need bank stabilization.

Question: Travis Morrison asked if streambeds are rock lined, why can't they mine below water line?

Answer: Sand and gravel permits are intended for the removal of loose material such as sand and gravel. If solid materials need to be excavated, then an open pit type of permit along with the Corps of Engineer 404/401 process would be more appropriate.

Comment: JCAR can become a part of this process and can veto these rules at that time.

Question: Can MDNR work with individual operators for site specific issues?

Answer: Yes.

Comment: The Department of Agriculture should help in writing these rules.

Comment: The department should provide a copy of how many complaints LRP has received. This should be provided at future meetings.

Comment: About a fourth of a sand and gravel operator's annual income pays for relocation costs.

Comment: Each inspector needs to visit with operators before making their judgements.

Question: Instead of daily cleanout requirements, why not set something like a "three feet" catchbasin clearance requirement?

Answer: That is a good comment along with other related comments. We are going to look at this requirement in consideration of what operators have been telling us.

Notes from the Instream Sand and Gravel Public Meeting
MDNR Southwest Regional Office
Springfield, Missouri
December 12, 2001, 6 to 8 PM

Attendees: MDNR staff included Larry Coen, Staff Director of the Land Reclamation Commission; Tom Cabanas, Mining Section Chief; Mike Larsen, Unit Chief Non-Coal and Don Boos, Water Pollution Control Program

Also see attached list of sign-ins.

1) **Introduction of meeting by Larry Coen**
2) **PowerPoint Presentation by Mike Larsen**
3) **Public comment and question period:**

Comment: One can get erosion in streams along areas where trees haven't been removed as well as areas where they have.

Comment: Wright County has small gravel bars where the 20' buffer zone doesn't leave much opportunity for gravel removal. The county will need frequent exemptions from the buffer zone requirements.

Question: Why do local governments get to damage streams, while commercial operators are regulated? The commercial operator is being discriminated against.

Response: Local governments are exempt from the permitting requirements of the Land Reclamation Act, therefore we cannot regulate their activities under the mining law. However, they are not exempt from the Clean Water Law, therefore any damage to streams may result in enforcement from the Water Pollution Control Program.

Comment: One operator was concerned that once present staff is no longer around that no one will work with them on issues such as variances to buffer zones and this will prevent them from mining the areas that they presently have access to at this time.

Response: If the variance were put into the permit document there would be little chance of a change being made in the future.

Comment: Landowners have sold gravel to commercial operators since the 1830's and should be allowed to continue to do that without regulatory control.

Question: One landowner wanted to know if he allows a miner to get gravel from the stream does the landowner need to have a permit.

Response: No.

Comment: A landowner felt that regulations were not needed, but that they are OK for those who are abusing the streams. It is necessary for the gravel mining industry to use common sense to remove gravel.

Comment: One person stated that the gravel on the inside curves of creeks needs to be cleaned out on a regular basis.

Comment: A statement was made that if the miners weren't doing things right that the landowner wouldn't let them back in anyway. One person felt that the stream channel needs to be adjusted by removing gravel in channel areas. Another stated that they want the streams to go back to natural channel areas and the streams need our help to accomplish that goal.

Question: One landowner wanted to know if they could give gravel away if they wanted it taken out of a creek.

Response: Yes, gravel can be given away but if it is sold then it is a commercial mining operation and a permit is needed.

Comment: It was stated that since areas around streams aren't in trees anymore they are therefore no longer in their natural condition and now need our help to revegetate the banks and keep stream from cutting into the banks by removing gravel from the right areas.

Question: One person asked how to go about getting approval to conduct channelization practices.

Response: This approval is only from the Corps of Engineers along with the MDNR Water Pollution Control Program.

Question: Why could gravel not be used to stabilize eroding banks.

Response: It can be done, but it is an activity that would require a Corps of Engineers permit as that material would be considered "fill".

Comment: MDNR's rules and regulations are too much. Regulations should apply only to the violators and not to the good stewards of the laws.

Question: Where were the pictures in the presentation taken?

Response: The photos are all actual Missouri mining operations. Specific locations were not documented for the purpose of the presentation.

Comment: Commercial operators who are going to survive economically all want to be able to return to the same landowners once gravel bars are built back. Therefore, they are not going to operate in a manner that dissatisfies the landowners anyway, so many of the rules and regulations are unnecessary to get compliance.

Comment: When trees are removed from the bottoms of stream channels, the stream course is able to naturally meander and create more gravel bars.

Comment: Spawning seasons should not apply to dry creeks, not should they apply to operators who stay out of the flowing water of creeks.

Comment: The Outstanding State Resource Waters should be published with a map, not just provided as a list or table. Operators often do not know where these designations begin and end.

Response: Don Boos indicated that to place all these onto a state map would be of little use due to the small scale required. He further indicated that he would be glad to help anyone place a particular stream segment on a map for specific inquiries.

Question: Can instream operators be notified of changes to the Clean Water Commission Outstanding Resource Waters? Operators are often unaware of changes.

Response: Don Boos said that he would be happy to place the group on a mailing list.

Comment: Operators are concerned that the new rules are just another step toward driving operators out of Missouri Steams. There was some discussion about whether or not it was a good idea to even mine stream gravel.

Comment: Operators in many areas would have to purchase gravel from a great distance to the nearest quarry, if stream gravel was not available.

Question: One person wanted to know if they could set up a screening plant in the creek bed.

Response: They can if the plant and any stockpiles are removed on a daily basis.

Question: There was a question of when were the spawning season dates.
If the creek was dry to they need to stay out of it.

Response: There would be no restrictions if the creek were dry.

Comment: One person requested a map of the state and federal outstanding resource waters.

Question: If these guidelines became rule and the list of creeks changed on the state outstanding resource waters, would they be prohibited from mining in those streams.

Response: They would be prohibited from mining on stream segments that were listed as outstanding resource waters.

Question: One person wanted to know who prepares the listing of state outstanding resource waters.

Response: The Water Pollution Control staff provides the changes for consideration and approval by the Clean Water Commission. They also have input from the Department of Conservation.

Comment: There was a comment that it seems that gravel operators are slowing being kicked out of streams and they wont be able to mine at all before too long.

Comment: One person volunteered to be on the committee that helps to select the state outstanding resource waters.

Comment: The list of the Outstanding Waters needs to be a current list. Some operators had received a list that was a couple of years old.

Comment: There was a lot of concern about the specific stream segment restrictions and how operators will know where they are on the ground.

Question: How will operators be able to find out about endangered species?

Response: Mike Larsen indicated that the mine inspector would work with the operator to find that information from MDC and USFWS.

Question: Mr. Wayne Morton asked whether or not operators were required to supply the name of the landowner. There was a complaint about a landowner not being notified that an application to mine gravel was pending on his property, which involved a lawsuit for a property right issue.

Response: At the current time, we take the word of the operator that he/she has gained the approval of the landowner to mine.

Landowner Presentation: Mr. Morton presented photos and maps to explain how his property was the subject of trespass and destruction without his consent to mine. A neighboring landowner gave permission, and then the operator just proceeded to mine without regard to property boundaries. He was concerned about damage having been done to his stream and MDNR's lack of authority to prevent such damage from occurring. He believed that MDNR needed tougher rules in order to keep the scofflaws in control. He felt that the department needs support and that they are trying to do something that everyone can live with. An example given was that it took MDNR five years to get an operator to stop a leaking diesel fuel tank at the rate of 15 gallons per day.

Comment: Operators indicate that permit documents are getting too lengthy.

Comment: Rules need to be more specific and not so general and MDNR needs to use more common sense.

Response: The requirements in the rules aren't new. They were developed by the Corps of Engineers who put them together following many public meetings.

Comment: One operator indicates that mining only to the water level actually does harm. The willows are encouraged by this and choke out the gravel bars and stream channel. It is actually better to mine four to six inches below the water level. This discourages willows so that the stream channel remains open.

Comment: The permit fees were lower and the applications simpler in the past, now it takes about 20 pages of paper to permit one site.

Response: If rules are passed, they will probably be incorporated into the application form so an operator won't have to write the requirements in for each site.

Question: Can buffer zones be adjusted as needed. Are worried about an individual inspector preventing them from having access to mine a particular creek.

Response: The department always does a lot of conference, conciliation and persuasion before any enforcement action is taken, which is indicative of the amount of work that is done with a facility operator in trying to solve problems.

Comment: Where the proposed rule talks about lowering the streambed, doing so doesn't destroy the stream upstream of where removal occurred. This activity doesn't hurt the stream.

Comment: One commentor lost 4-5 sites to willow growth. This occurs if they are not allowed to take gravel out below the water line. Actually it is a function of not having had the usual periodic floods that move more gravel into these locations.

Comment: One landowner got a lot of stream bank erosion from operators removing gravel above and below him. It tears the trees up.

Question: What about an island of gravel that has tree growth?

Response: The intent of tree protection is to really protect the stream banks. Trees growing out in the water on gravel bars away from the banks can safely be removed without creating an erosion problem. If it is not a commercial operation, one could hire a contractor to move the material and work with the Corps of Engineers if necessary.

Question: What about signs to be posted at gravel bar sites?

Response: The purpose of signs is to help the inspector and the public know whether or not they are at the right location when visiting a mine site. Signs are more appropriate at fixed quarry sites. As long as an inspector or other people can find the location of the mining operations, then the intent of the law has been met.

Comment: If the rule goes into effect the operators want a cost estimate on the fiscal note attached to the proposed rule that would take into effect the cost of transporting sand from the

Jefferson City area. This information would be needed in order to make appropriate changes to their operation.

Response: The rules are not meant to restrict anyone from removing gravel, but we may have to reexamine the fiscal not on the proposed rule.

Comment: There is a need for state rules in order to prevent the federal government from passing rules that they could not live with.

Notes from the Instream Sand and Gravel Public Meeting
MDNR Southeast Regional Office
Poplar Bluff, Missouri
December 19, 2001, 6 to 8 PM

Attendees: MDNR staff included Larry Coen, Staff Director of the Land Reclamation Commission; Tom Cabanas, Mining Section Chief; Mike Larsen, Unit Chief Non-Coal and Don Boos, Water Pollution Control Program

Also see attached list of sign-ins.

1) **Introduction of meeting by Larry Coen**
2) **PowerPoint Presentation by Larry Coen**
3) **Public comment and question period:**

Question: Is a permit required for commercial operators if he takes gravel off his own private property?

Response: Yes, any commercial operator is required to have a permit even if he is obtaining the mineral from his own private property.

Question: Is a landowner responsible for damage that a commercial miner may cause?

Response: No, under the Land Reclamation Act there would be no landowner liability. However, under the Clean Water Law there may be some landowner responsibility.

Comment: The landowner needs to be aware of the laws so he would know what liabilities they may get into by letter a gravel mine onto his property.

Question: Related to the rule concerning locating a gravel screening or washing plant above the 'high banks', exactly what is considered the floodable area or 'high banks'?

Response: The high banks are the areas that contain the flow in a stream during any normal rainfall event. This would not include areas where water would flow during an extreme flood event. Nor is it the same as the 'ordinary high water mark' that is referred to by the U.S. Army Corps of Engineers.

Question: Being concerned with protecting the environment, what is going on for the county governments who get some gravel for themselves?

Response: County governments can get assistance from the various agencies who offer advise on this matter such as the Corps, Dept of Conservation and Dept of Natural Resources. There are some publications available as well.

Comment: There is a need to separate creek operations from those that are regulated by the Corps.

Question: Is the Department of Natural Resources changing anything from what we are requiring to be done at this time?

Response: No, we are only developing some rules to accomplish what we are already doing at this time.

Question: Can a landowner remove a gravel bar or move a channel?

Response: Yes, but one should contact the Corps of Engineers before doing so.

Question: When vegetation grows up in the middle of a stream it forces the water to either side and this can create bank erosion. Is there anyway that an operator can get an exemption to remove willow growth if it is larger than the size limits in the proposed rule?

Response: Yes, exceptions can be made to any of these requirements on a case-by-case basis. The Land Reclamation Program has made such exceptions in the past and will continue to do so in the future.

Question: Who does one call to reestablish a dirt bank?

Response: You can contact the Land Reclamation Program, Corps or Engineers, Natural Resource Conservation Service, or Missouri Department of Conservation.

Question: Will the proposed rules be available when they come out to the public.

Response: Yes, we can add anyone's name to a mailing list to notify him or her when the rules are published in the Missouri Register. You can also find them by going to the Secretary of State's web page under the administrative rules link.

Question: Why is there a buffer strip requirement?

Response: Mainly to ensure that the operator stays out of the water. The amount of buffer strip can be altered on a case-by-case basis, however.

Question: How long does it take to get someone to come out to look at an area where a variance is requested?

Response: It might take as long as two weeks, but we try to get out sooner.

Comment: It was good to hear that the Department of Natural Resources is using some flexibility and common sense. DNR needs to be commended for being so open minded and hope that they continue to do so.

Comment: Black top and concrete are keeping the water from getting into the ground like it used to do. It now can only run off.

Comment: Mr. Robert Dixon, Glenallen, MO wanted to be added to the mailing list to be notified of the publishing of the proposed rule in the Missouri Register.

Reclamation Act does not provide any exemption for living creatures except in the flowing water.

Question: What about sediment stirred up at stream crossings? Is this considered a problem?

Response: No, not under the Land Reclamation Act. There will be some sediment moved around, but we recognize this as a necessary part of the process.

Question: Can there be more public involvement in the Land Reclamation Commission process?

Response: The Commission itself is appointed by the Governor. The public is always welcome and encouraged to attend and speak up at Commission meetings. The Commissioners always view public comments as an important part of their decisions.

Question: What permits are needed for open pit operations?

Response: Besides the Land Reclamation Permit, many operators will also need an NPDES permit from the Water Pollution Control Program and an air permit from the Air Pollution Control Program. The air permit is probably only needed for a crushing operation.

Question: What bonds are needed for an open pit operation?

Response: There are more costs involved in getting an open pit permit. Besides the permit fee itself, there must also be a reclamation bond, which is a type of insurance for the state, in case the operator is not able to complete reclamation. Once reclamation is complete and released by the Commission, the reclamation bond is returned to the operator. In stream sand and gravel operations do not require a reclamation bond up front, since the creek channel is self-reclaiming as long as the operation is completed according to the rules. There is a provision in our rules that a reclamation bond can be required at a sand and gravel site after documented damage has occurred to the stream channel.

Question: What about flood plain sand and gravel sites? Are these considered instream or open pit sites?

Response: The flood plain sites are considered open pit sites with reclamation bonding requirements. The stream channel will not reclaim these sites except for catastrophic flooding, so the operator is responsible for reclamation at these sites.

Comments by Scott Hamilton, WPCP: #13 addresses Outstanding Waters, and prohibits activities within them. Obviously, effects from S & G can affect more than the area of excavation, e.g. headcuts and downstream erosion. If the wording is changed so that "affecting" is inserted after "...prohibited from..." the outstanding areas will be better protected. Our conditioning on excluding projects in similar situations reads:

Notes from the Instream Sand and Gravel Public Meeting
Rockbridge High School
Columbia, Missouri
January 16, 2002, 6 to 8 PM

Attendees: MDNR staff included Larry Coen, Staff Director of the Land Reclamation Commission; Tom Cabanas, Mining Section Chief; Mike Larsen, Unit Chief Non-Coal and Scott Hamilton, Water Pollution Control Program

Also see attached list of sign-ins.

1) **Introduction of meeting by Larry Coen**
2) **PowerPoint Presentation by Mike Larsen**
3) **Public comment and question period:**

Question: Are only rubber tire vehicles allowed on the gravel bars are creek areas, or are track vehicles allowed?

Response: There are no restrictions for vehicles that do not operate in the water. There are some restrictions for equipment that operate in the flowing water under other circumstances, but this should not apply to our permit holders.

Question: Are there any restrictions to the farmer for personal use?

Response: No, not under the Land Reclamation Act. There may be other water laws that would apply to the farmer, but our mining rules exclude farmers and personal use.

Question: Sometimes, buffer zones that are tall can actually create a backwater impoundment. Can these types of tall buffer areas be lowered as long as the flowing water is still protected? This would eliminate the ability of the removal area to become an impoundment.

Response: That is a good question, and the first time it has been asked. That seems reasonable, and is the type of thing that an inspector can look at with the operator and agree on the right approach. This should be acceptable as long as the flowing water is protected.

Comment: Operators would like relief on the issue of spawning restrictions. These seem unnecessary if the flowing water is not disturbed.

Comment: Every rainstorm event has the potential for more soil disturbance than most operators will ever cause.

Question: Do the gravel bars contain critters that need to be protected?

Response: There are eggs and larvae in the gravel bars, especially during wet seasons. There could be an issue of endangered species that should be considered. However, the Land

Reclamation Act does not provide any exemption for living creatures except in the flowing water.

Question: What about sediment stirred up at stream crossings? Is this considered a problem?

Response: No, not under the Land Reclamation Act. There will be some sediment moved around, but we recognize this as a necessary part of the process.

Question: Can there be more public involvement in the Land Reclamation Commission process?

Response: The Commission itself is appointed by the Governor. The public is always welcome and encouraged to attend and speak up at Commission meetings. The Commissioners always view public comments as an important part of their decisions.

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" *If the activities are located in or occur within two miles upstream of a designated outstanding state or national resource area (10 CSR 20-7.031).*"

This wording (or something similar) may be better understood by the public.

#4 addresses the depth of excavation, and prohibits excavation lower than the lowest undisturbed elevation (streambed). Having excavations at the same elevation as the streambed may cause the stream to move into the new "channel" after high flow events. This obviously may have serious consequences for the stream system. If the wording were changed to ensure the bottom elevation of the excavation was at a higher elevation than the streambed, the stream channel would be less likely to jump where it shouldn't.

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STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.state.mo.us

November 8, 2002

Honorable Sarah Steelman
Missouri State Senate
State Capitol Building
Room 433
Jefferson City, Missouri 65101

Dear Senator Steelman:

Thank you for your continuing interest in the department's Sand and Gravel Workgroup reflected by your significant commitment of time attending the second workgroup meeting on October 22, 2002 in Jefferson City. I understand you posed a number of questions you believe had not been addressed by the workgroup. You raised fundamental questions about both the legal authority and technical basis for the department's regulatory activities. These fundamental questions deserve a prompt and complete response as a precondition for moving forward on any regulatory activity. Clearly, the department should not consider regulatory controls unless there is a legitimate technical need for regulation to protect human health or the environment and a legal mandate. Moreover, the regulatory activity must balance environmental protection with economic costs. Your questions are addressed below and in attached documents.

After considering your questions and the analytical basis for regulating sand and gravel mining, I am convinced that the department has established the legal mandate and the technical need for the regulations. Now, the task is to move ahead with our stakeholders and the Commission to develop regulations that satisfactorily balance environmental operations and economic costs.

In this letter I will respond to the questions that you raised, as I understand them. In all of the materials contained in this letter I emphasize that our purpose is to act in concert with those in the mining industry to protect the state's natural resources as they conduct their business. Similarly the resources of local governments and neighboring citizens are at risk. It behooves us all to learn ways that we can utlilize our rich resource base while managing it for long term productivity.

1) *What is the department's basis for asserting legal authority for establishing rules on stream protection related to sand and gravel?*

The department believes it has the legal authority to make rules that prevent pollution from sand and gravel operations. The department's authority for this activity is found in Chapter 444, Land Reclamation Act. Specifically, Section 444.767(1) authorizes the Land Reclamation Commission to adopt and promulgate rules and regulations to administer the Act. Section 444.530.1(1) has similar language authorizing the Commission to promulgate regulations to administer the Land Reclamation Act. Section 444.770 applies to permits that are required. Section 444.770.1 specifically makes it unlawful for sand and gravel operations to operate without a permit. The protection of wildlife and aquatic resources is one of the factors the department is required to address under the policy statement of the law (section 444.762). By carrying out this section of the Land Reclamation Act, the department has the authority to regulate those impacts of sand and gravel operations that impact wildlife and aquatic resources through its administration of industrial minerals permits. For your information, a copy of the department's rulemaking concurrence form, which states general counsel finding that there is authority for the rulemaking, is provided as Attachment A.

2) Why does the Land Reclamation Commission need to regulate stream protection? You asked for examples of how streams are not being protected by other rules and why the Land Reclamation Commission can fill this role.

The Land Reclamation Commission is required by statute to regulate stream protection. Providing regulations could serve to improve a number of efforts. Regulation could provide both guidance or direction as well as a better ability to keep all the industries on a level playing field. There have been a number of documented stream problems associated with improper in-stream mining. Examples of stream problems that might have been avoided had the operations adhered to guidelines such as those being discussed are appended to this letter as Attachment B. There also has been significant citizen interest in addressing the problems related to in-stream sand and gravel mining. Samples of those comments are contained in Attachment C. In addition, many research studies have documented the problems that stem from in-stream sand and gravel mining. Excerpts from some of those studies are shown in Attachment D.

The protection of water quality is also within the authority of the Missouri Clean Water Law, Chapter 644 RSMo. As was discussed in the Workgroup, the development and first uses of the sand and gravel excavation guidelines were in conjunction with Corps of Engineer permits and the department's water quality certification of those permits. Certifications are issued under the authority of the federal Clean Water Act. In addition, the Missouri water quality standards, state regulation 10 CSR 20-7.031 specifies conditions that must be met in state waters, and the guidelines provide management practices that will meet those standards. We agree the guidelines could be promulgated under the clean water law, and the department may pursue that at some point. However, the major operations that would be subject to the guidelines hold land reclamation permits. Proceeding through the land reclamation authority allows a significant level of protection for the resource while at the same time ensuring the guidelines are suitable before they are applied as general requirements across the state.

3) *What references in the Land Reclamation Act tie back to these proposed rules? In other words, where are the specific citations for our authority?*

References in the Land Reclamation Act are listed in Attachment E.

4) Why do we need to transition from the current guidelines to rules? You indicated you feel that the guidelines are working fine, and we do not need to move to more formal rules.

Ms. Valentine explained during the meeting the department is often challenged and encouraged to turn guidelines into rules. There is a general expectation that the department's requirements be established through a public process that allows for input from regulated parties as well as from the public at large, and the rulemaking process accomplishes this. There is also, however, a recognition that rules lack the flexibility of guidance. This is desired in certain situations, especially detailed technical issues or those that may change frequently in comparison to times required to modify rules.

Under section 536.021.9 of the Administrative Procedure Act, the mandate to promulgate regulations is triggered when dealing with a "statement of general applicability." An agency rule or regulations is defined at 536.010(4) to include an agency statement of general applicability that implements, interprets, or prescribes law or policy. Because these proposed rules will reflect the Land Reclamation Commission's practice on how sand and gravel operations are regulated, and this will have a future effect on unnamed and unspecified persons, specifically various sand and gravel operators, rulemaking is necessary. *Missouri Department of Social Services v. NME Hospital, Inc*, 11 SW3d776 (Mo. App. 1999). Case law is clear that implicit in the concept of "rule" is an agency declaration that has a potential, however slight, of impacting the substantive or procedural rights of some member of the public. *Baugus v. Director of Revenue*, 878 SW.2d 39, 42 (Mo banc 1994). Here, a proposed regulation, which would require the operator to meet certain conditions before a permit is issued, affects the substantive rights of operators who will need to apply for a permit. That is why we're doing this by rule rather than policy.

I understand that there may be more than one approach that results in the protection of streams. The work group is asked to consider how this protection can be provided in a way that is cost-effective, appropriate, effective, predictable and timely. In our opinion the establishment of specific performance criteria within permits for sand and gravel mining in a publicly developed and readily available rule meets this objective.

I trust that the information in this letter provides answers to the concerns you have raised. If you need additional information or have other questions, please let me know and we will do our best to provide what you need.

Again, we appreciate your willingness to participate in these discussions and to assist the department in reaching solutions that protect our resources for generations to come while conducting our business today.

Thank you.

Sincerely,

AIR AND LAND PROTECTION DIVISION

James D. Werner
Director

Enclosures

c: Mr. Steve Mahfood, Director
Missouri Department of Natural Resources

Division of Environmental Quality

Request for Approval to Begin Development of a Rulemaking

Program: Land Reclamation Program			Chapter #: 10 CSR 40 Rule #: 10.020, 10.050	Rulemaking type: Amendment
Rule Title: Various				
Statutory Authority: 444.530 RSMo (1994)			Significance and Priority Levels: Medium Priority (Significant/nonsignificant) ; (High, Medium, Low Priority) (see scoping meeting policy for definition)	
REQUEST DISPOSITION			SIGNATURES	
LEGAL AUTHORITY	☒ ADEQUATE	☐ INADEQUATE	*Legal Counsel:* Jennifer S. Graham date: 2/3/00	
Submitted by →			*Program Director:* Tom Clarke for L.C. date: 12/28/99	
☐ APPROVE	☐ PARTIALLY APPROVE	☐ DISAPPROVE	*Division Director:* date:	

The following text contains the rationale for the action and a full explanation of the legal and policy basis for the proposed rulemaking. Included are how the rulemaking enhances and fits with the department's overall goals and mission. (Limit text to 1000 words if possible.)

THE ISSUE AND ITS BACKGROUND

These amendments make Missouri's rules on surface mining of industrial minerals include the Water Pollution Control Program's Water Quality Protection Guidelines for Sand and Gravel Excavation in the requirements for permit application submittal and as a requirement for operation during sand and gravel removal.

LEGAL / POLICY BASIS FOR RULEMAKING

Authority to adopt and promulgate rules is given to the Land Reclamation Commission in section § 444.530 RSMo. (1994).

RULEMAKING CONCEPT

The present rules do not address how sand and gravel miners must operate in a manner that will minimize water pollution and protect the integrity of the stream corridor. The above-mentioned guidelines will address this issue.

EXPECTED ENTITIES TO BE AFFECTED AND SIGNIFICANCE OF COSTS

Sand and gravel operators who remove these minerals from the stream corridor will be impacted. However, the private entity will not be significantly affected or incur costs as a result of these amendments.

This rulemaking does not require additional staff to implement. Therefore, the state agency will not incur costs in association with carrying out the responsibilities of these revised rules.

PROPONENTS / OPPONENTS

None.

RULE DEVELOPMENT PROCESS

A scoping meeting with the Mining Industry Council is Planned. Interdepartmental coordination will be conducted between the Land Reclamation and Water Pollution Programs as needed.

ANTICIPATED BENEFITS

This rulemaking will allow the State of Missouri to ensure that sand and gravel removal is conducted in a manner that will minimize the effects to the water resources of the state and help protect the stream corridor from accelerated erosion.

Attachment B

Examples of Environmental Damage Caused by In-Stream Sand and Gravel Operations

Schultz Sand and Gravel

Johnston Sand & Gravel

Vaughn Ready Mix

Walnut Ridge Enterprizes

Havin Materials Service

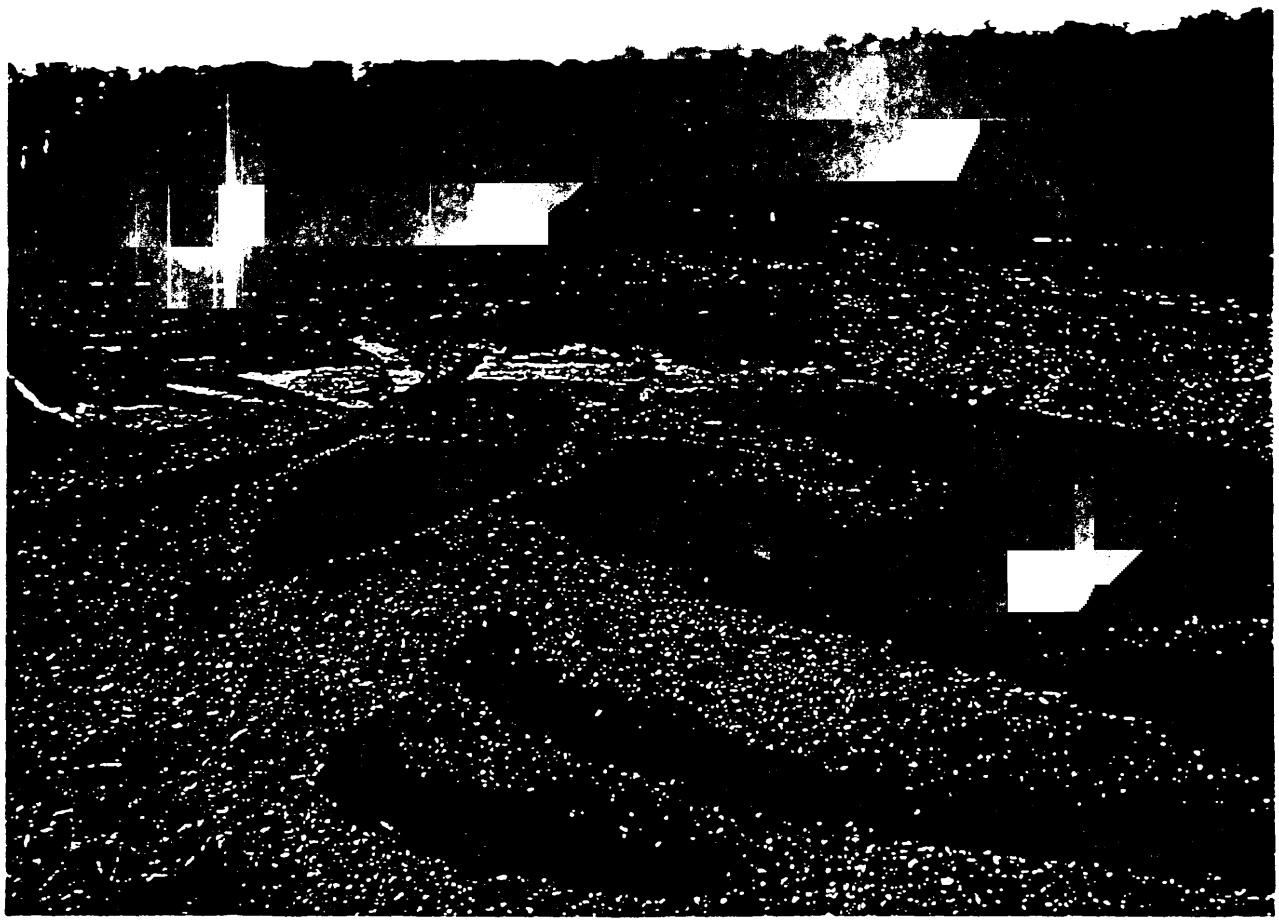
Smasal Aggregates

Linn Creek

Schultz Sand and Gravel

Schultz Sand and Gravel on Cole Camp Creek near Cole Camp, Missouri. Currently the Land Reclamation Commission is considering a proposed permit expansion. About 75 residents have provided written complaints about how muddy the water has become and about sedimentation that is causing a problem for all who attempt to use the creek for purposes other than mining. Specifically, these letters describe the problems as follows. Copies of the letters are available if you would like to review them.

Eroded banks and shallow water in a Benton County stream. Schultz Sand and Gravel
(February 2002)



Equipment travel and in-stream gravel mining caused erosion and no flowing water in Cole Camp Creek. Schultz Sand and Gravel (October 2002)

Landowner complaint letter statements:

- Mr. Dallas Brown of Warsaw wrote on August 29, 2002 "The water stays muddy most of the year. Many people depend on Colecamp Creek for recreation but it's so muddy no one can enjoy the water."
- Mr. Sterling Swearngin of Warsaw wrote on September 9, 2002 "The removal of gravel down to solid rock has also destroyed the habitat of various fish life in the stream such as fresh water mussel, nesting water holes for fish, flat head catfish, large mouth bass, blue gill, etc. The stream was noted over the years for walleyed pike. It is now too muddy for them to occupy."
- Leland and Martha Lee of Warsaw wrote on August 30, 2002 "This tears up the creek and makes it so dirty, silty and oily it's hard for the fish to come up....Makes me sick they think they can do anything they want to. We built a real nice place down here. They are ruining the land price of our property and other folks places too. They don't care if they ruin the creek. All they care for is to make lots of

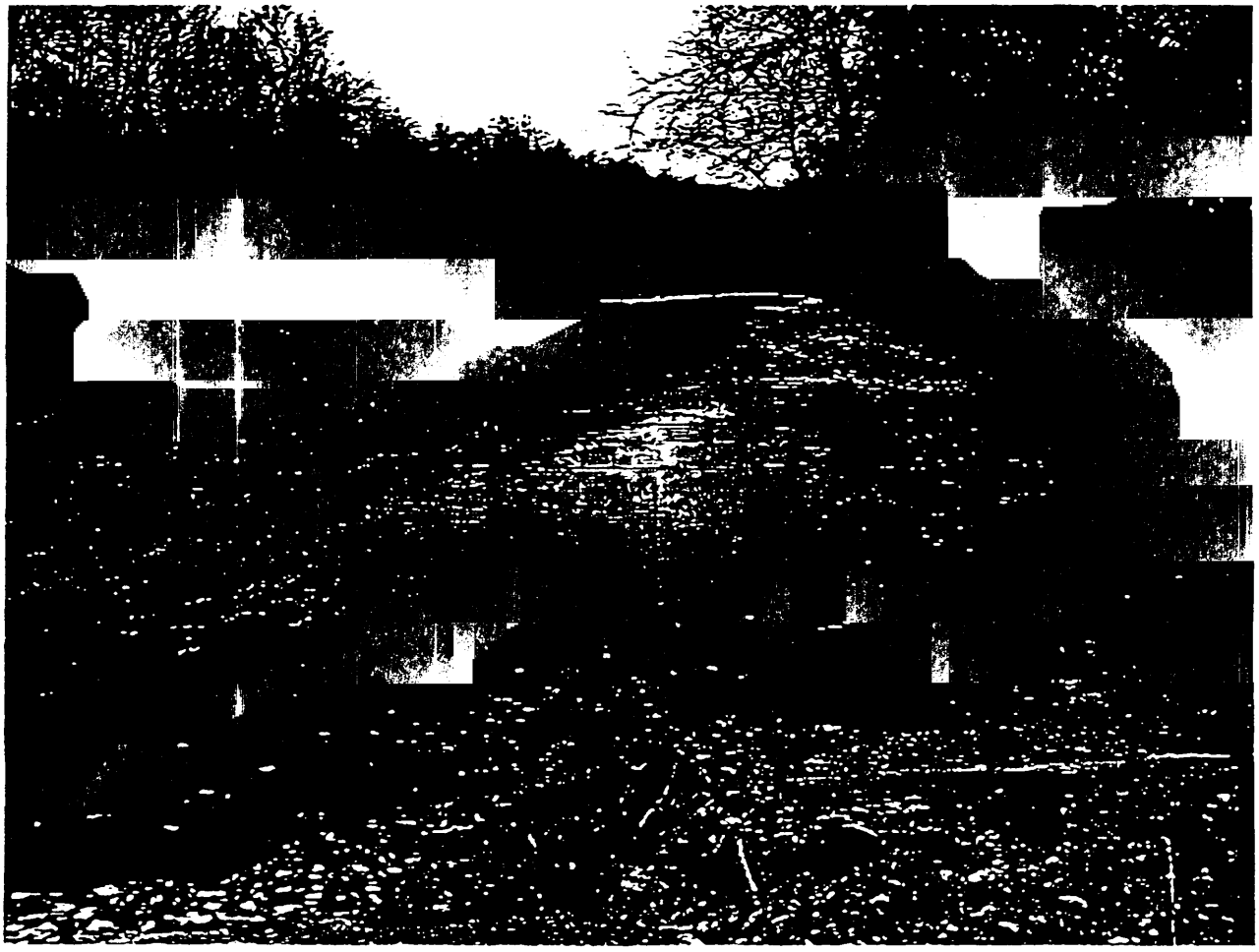
money at our expense."

- In a telephone conversation, Mr. Lee stated "he wrote into us complaining about the muddy water and now it is our job, because that is what we get paid for, to investigate the issue of the muddy water."

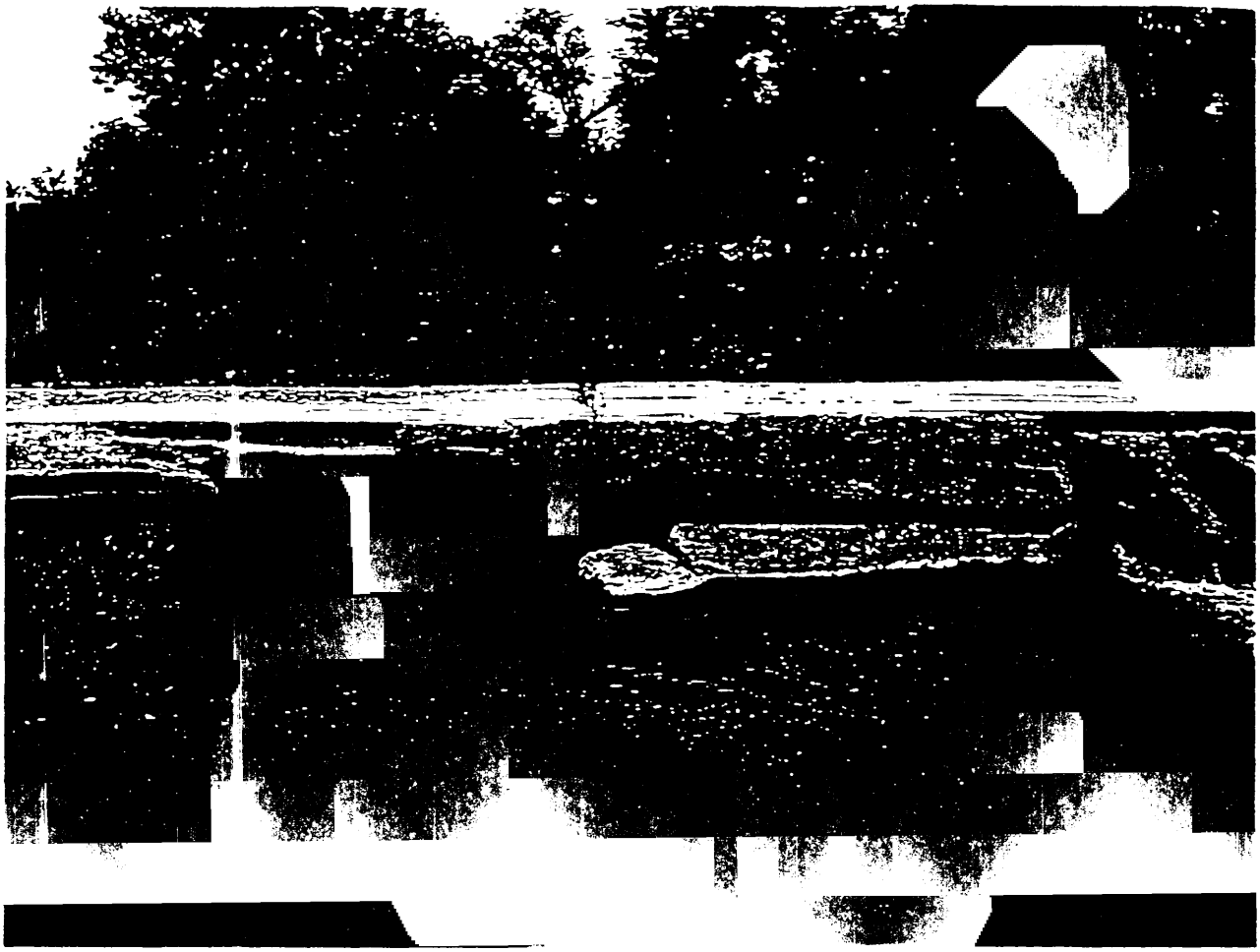
There are no documented damages to the local infrastructure such as roads and bridges, but clearly there is a concern for the loss of the recreational value of this Ozark stream.

Johnston Sand & Gravel

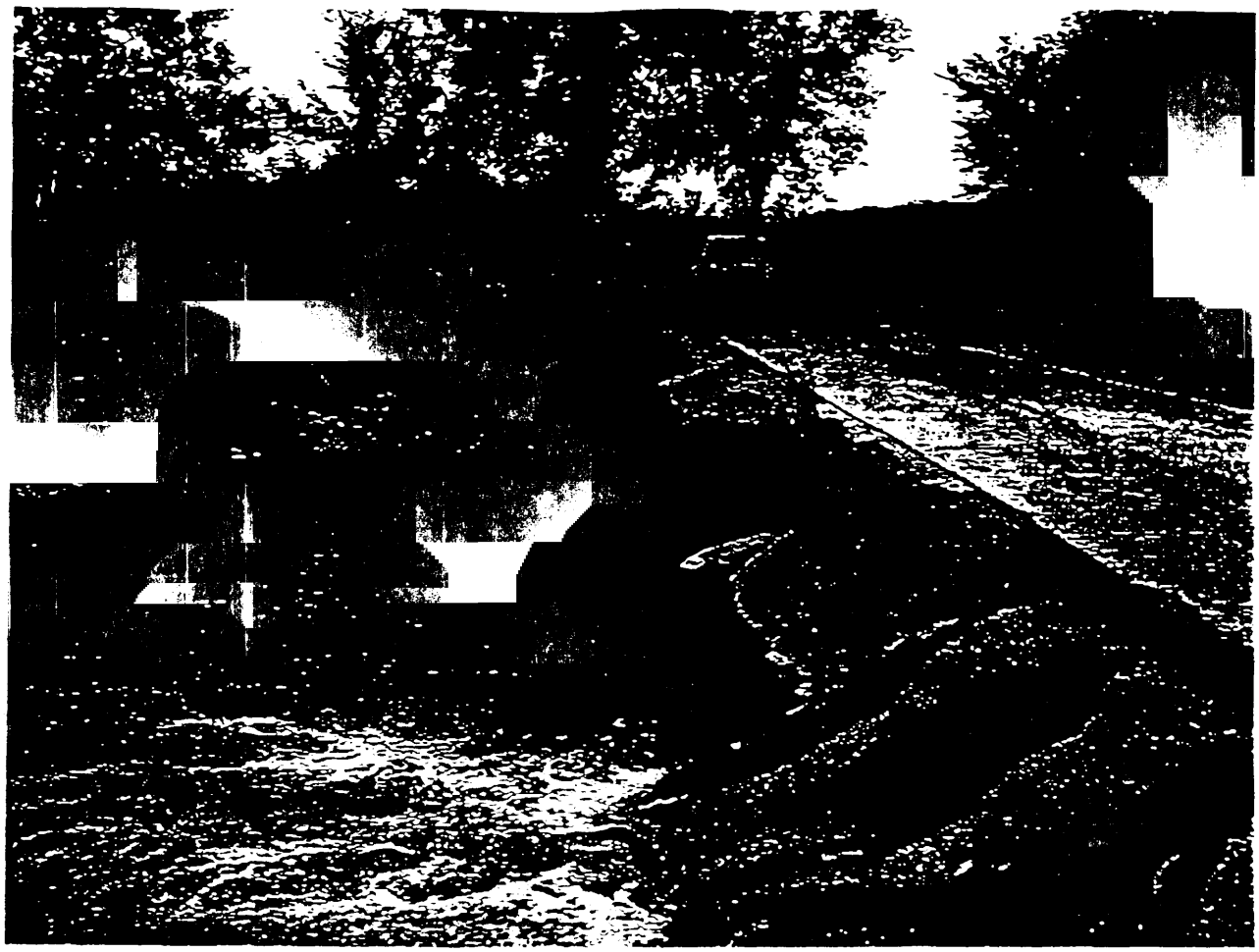
Johnston Sand & Gravel removed gravel at Sellars and Murphey Creeks in Camden County. Here the Department of Conservation (MDC) cost-shared an erosion control structure with the county in an attempt to save a low water crossing at a county road. The Land Reclamation Program and Water Pollution Control Program addressed this in September 2000. Charles Johnston mined below the water level and caused headcutting, which damaged a county road low water crossing upstream of the extraction site. A total of 18 acres of stream channel were impacted by this unpermitted mining operation. The complaint was first called in by nearby landowner Mr. Less Richardson. Local government and MDC spent approximately $10,000 for the repair that was needed to correct the damage to the low water crossing and to install a grade control structure to protect the crossing from further damage in the future. Additional work appears necessary as the creek bed continues to degrade and threaten the crossing. Please see pictures of the site before reconstruction and currently threatened.



Looking upstream, Sellars Creek in Camden County has not been impacted above the bridge.
Johnston Sand & Gravel (March 2002)



The bridge in Sellars Creek in Camden County before repairs.
Johnston Sand & Gravel (June 2001)



A view of the bridge before repairs at Sellars Creek in Camden County from the opposite angle.
Johnston Sand & Gravel (June 2001)

The bridge at Sellars Creek in Camden County after repairs. Johnston Sand & Gravel
(March 2002)

Vaughn Ready Mix

Vaughn Ready Mix on the Jacks Fork River in Shannon County. There was a complaint filed by a senator concerning the company's operation where the operator mined below the water level. The senator was concerned about the effect of the operation on his commercial campground operation (mainly from the noise levels at the screening/washing plant), which was nearby. The Vaughns subsequently moved their operation to an alternate location that also received several complaints from Mr. Morton. The Land Reclamation Program noted several poor mining practices occurring at this later site, prompting Mr. Morton's complaints.

Looking upstream with mining having taken place from bank to bank.
Vaughn Ready Mix
(July 2000)

Materials pushed into the bank vegetation will eventually cause vegetation to die and expose the banks to erosion, if not corrected. Vaughn Ready Mix (July 2000)

Walnut Ridge Enterprizes

Adolph Lieback, a/k/a, Walnut Ridge Enterprizes, on the Bourbeuse River in Franklin County. This operation mined out a large gravel bar and removed quite a quantity of gravel below the water level and dug into the bank. This site was inspected as a result of a complaint. The operation caused substantial damage to the river at that location in the form of major excavation into the banks of the river causing massive bank failure and resulting property loss and downstream sedimentation. Violations were issued in 1995 and corrective actions were required to stabilize the stream banks, which was done by the operator.

A backhoe used to reach out and down into the river bottom causes a vertical, unstable bank along the river. Walnut Ridge Enterprizes (1995)

Havin Materials Service

In addition we would note that stream problems can be addressed and mitigated, although prevention of the problems is always the preferable option. As an example we would note the experience of Havin Materials Service in Phelps County south of Rolla in the mid-1980's. By working through the stream problems with the operator, the department was able to solve the problems in the Little Piney River, which is a cold water trout stream. The willing cooperation of the operator was instrumental to solving this problem and very much appreciated by the department. The company remains in business at this location today.

No photo available.

Smasal Aggregates

A complaint investigation was conducted at this operation in Benton County on February 24, 1998. The complaint was anonymous and alleged improper mining practices in the course of excavating sand and gravel from Indian Creek. An inspector from the Land Reclamation Program determined that the excavation was not being done in accordance with generally acceptable practices. As a result, increased channel erosion and downstream sedimentation was occurring. In addition, the mining company had constructed a stream diversion channel to divert the normal channel away from the site of excavation.

During 1998, the Army Corps of Engineers was the permitting and enforcement authority that regulated this type of mining activity. As a result, the Corps conducted their own investigation of this site shortly after the Land Reclamation Program investigation. Their inspector made the same observations and following the Corps' inspection a "Cease and Desist" Order was issued to Smasal Aggregates by the Corps. This Order mandated that mining at this location stop immediately and no further mining has been allowed to occur.

Damage resulting from this improper mining included the beginnings of a head cut which caused increased erosion within the original channel upstream of the excavation site and downstream sedimentation resulting from the material eroded from upstream of the excavation site. It is fortunate that the mining operation was ceased when it was. Had mining continued with the excavation in the way that it was being done, it is certain that greater damage to both upstream properties and downstream reaches of Indian Creek would have resulted.

No photo available.

This sewer pipeline at Linn Creek was previously buried beneath the stream bed. It is now high enough above the new stream base to walk under. Linn Creek Sand & Gravel (Mid-1980s)

One of the more common problems identified with in-stream operators is the tendency to affect the banks adjacent to the removal site. This can either be by actually digging into the banks or by shoving the oversize cobbles into the banks. Several operators have been cited by the Land Reclamation Program for this practice, which results in excessive deposition of this material on downstream landowner properties. Companies that have been cited for this practice in the past are Houston Redi Mix, Vaughn Sand and Gravel, Hekawee Land Company, Cannon Properties, Bentley Trucking Inc. and EBS Backhoe Service Inc.

Attachment C

Public Comments on Proposed Rules

Excerpts from some recent letters from the public supporting action on the guidelines:

Jim and Cathy Huckins of Columbia wrote on August 4, 2002:

"As a professional in environmental research for 32 years and an avid stream fisherman, I am very concerned about the water quality and fishery resources in our Missouri streams. I don't see how the risks to Missouri's river environments have changed any since the establishment of the Corp of Engineer's rules for gravel and sand mining...I urge MDNR to take a lead role in this committee to ensure that water quality is not compromised in one of Missouri's greatest treasures, our Ozark streams. My family, friends and a number of conservation groups and clubs will follow what happens very closely. We realize that our rivers and streams must be managed for multiple uses but we cannot allow one use to greatly impact others."

Michael Webb of Jefferson City wrote on August 3, 2002:

"I am an avid outdoorsman and also a concerned citizen. Missouri has many treasures that we must protect and many of these treasures are the streams that hold our many game species of fish that we all love to fish for. ...If I were to plan a fishing trip to the Little Piney River today, to the newly designated Wild Trout section of the Little Piney, I would see a new mining operation. I cannot believe that this section, designated only two years ago, has a new mine on it. This is flirting with disaster on such a pristine waterway that holds such a beautiful fish, the wild Rainbow Trout."

Jerry Benson of Lebanon wrote on September 23, 2002:

"I am totally in favor of conserving the quality of Missouri streams and support strict regulations pertaining to the mining of gravel in Missouri or totally disallowing any mining of gravel in our streams I Missouri. I have been an avid floater for 40 years. I have floated most all the streams in the Southern part of Missouri and I have personally seen the destruction that mining can do to our beautiful streams."

Terry Dow of Springfield wrote on September 18, 2002:

"Please do everything possible to, at a bear minimum, keep our current gravel mining regulations enforce and if at all possible strengthened. ...If the city of Springfield and it's residents can spend millions of dollars to help dramatically reduce the level of phosphorus in it's sewage treatment which in turn flows into Wilson's Creek, James River and finally into Table Rock Lake, our DNR needs to also step up the plant and do their part. No one should be more well aware than our highly rated, nationally acclaimed Missouri DNR that it is far less expensive and time consuming to correct a situation such as this on the front end, than deal with it at a later dare, for it may very well be too late for a generation or more, of Missouri residents and tourists who care deeply about Missouri rivers, streams and lakes."

Attachment D

Research Studies on the Impacts of In-stream Sand and Gravel Mining

Brown, Arthur and Lyttle, Madeline. 1994. Impacts of Gravel mining on stream ecosystems. University of Arkansas.
"Substrate degradation (erosion) that results from gravel mining disturbances causes several problems in addition to altering channel morphology and undercutting riparian trees. Fine sediments are released from interstitial spaces where they have settled, thereby increasing turbidity of the water. Benthic invertebrates, fish larvae, and fish eggs may also be entrained in catastrophic drift (Waters 1962) downstream...Aggradation buries benthic organisms (algae, invertebrates, fish eggs and larvae) and macrophytes under the transported sediments...
"Environmental degradation extended far beyond the boundaries of the gravel mining areas for several reasons. Headcutting has major consequences for many kilometers upstream from the mines. Downstream areas have too little gravel bedload to maintain normal stream channel structure because gravel is intercepted by flow alteration at the mines and then by mining removal. Silt travels long distances downstream as a plume of turbidity while gravel is being removed. During floods turbidity is higher than normal for even longer distances downstream due to the increased entrainment of sediments as a result of channel deformation."

Brown, Kenneth and Curole, Jason. 1993. Longitudinal changes in the mussels of the Amite River: Endangered species, effects of gravel mining and shell morphology. Louisiana State University.
"This study thus vividly confirms the earlier report by Hartfield (1989) that the mussel assemblage of the middle reach of the Amite has declined because of gravel-mining related activities. Gravel mining results in bank erosion and a broader, shallower channel with a meandering flow (Hartfield, 1989), and we observed repeated instances of mussel stranded in shallow meanders and pools. The mussels apparently select the slower-flow, soft-sediment environments of these pools, but the pools are very susceptible to drying, as the river level drops. Gravel mining has evidently eradicated mussel assemblages in a major portion of the river, and could have even more drastic effects if mines expand further into the lower reaches of the river."

Roell, Michael 1999. Sand and gravel mining in Missouri stream systems: aquatic resource effects and management alternatives. Missouri Department of Conservation.
"The stability of sand-bed and gravel-bed streams depends on a delicate balance among stream flow, sediment supply from the watershed, and stream channel form. Mining disrupts sediment supply and channel form, which can result in a deepening of the channel (incision) over great distances upstream and downstream of the mine site as well as sedimentation of habitats downstream. Channel incision often leads to accelerated bank erosion, a wider and shallower channel, and lowering of the floodplain water table. Channel instability and sedimentation from instream mining also can damage public infrastructure (bridges, pipelines, and utility lines) and result in losses of fishery productivity, biodiversity, recreational potential, streamside land and real estate value..."

SUMMARY

Gravel is extracted from many rivers for use in industry or as part of flood-control programs. In few cases is extraction carried out according to a plan which includes an assessment of possible effects on rivers. This report is intended to guide planners who may be undertaking a program to assess, predict, or manage effects of gravel extraction. The publication is organized into four parts, as summarized below.

Effects on Rivers of Gravel Extraction (p.1-2).

The effects of gravel extraction on river morphology and sediment transport are summarized from published field studies and from analysis of several additional rivers on which we have supplemented unpublished studies.

The summarized effects include:

(1) Extraction of bed material in excess of replenishment by transport from upstream causes the bed to lower (degrade) upstream and downstream of the site of removal.

(2) Bed degradation can undermine bridge supports, pipe lines, or other structures.

(3) Degradation may change the morphology of the riverbed, which constitutes one aspect of the aquatic habitat.

(4) Degradation can deplete the entire depth of gravelly bed material, exposing other substrates that may underlie the gravel, which could in turn affect the quality of aquatic habitat.

(5) If a floodplain aquifer drains to the stream, groundwater levels can be lowered as a result of bed degradation.

(6) Lowering of the water table can destroy riparian vegetation.

(7) Flooding is reduced as bed elevations and flood heights decrease, reducing hazard for human occupance of floodplains and the chance of damage to engineering works.

(8) The supply of overbank sediments to floodplains is reduced as flood heights decrease.

(9) Rapid bed degradation may induce bank collapse and erosion by increasing the heights of banks.

(10) In rivers in which sediments are accumulating on the bed (aggrading) in the undisturbed condition, gravel extraction can slow or stop aggradation, thereby maintaining the channel's capacity to convey flood waters.

(11) The reduction in size or height of bars can cause adjacent banks to erode more rapidly or to stabilize, depending on how much gravel is removed, the distribution of removal, and on the geometry of the particular bend.

(12) Removal of gravel from bars may cause downstream bars to erode if they subsequently receive less bed material than is carried downstream from them by fluvial transport.

Assessing Gravel Harvesting Effects (p. 2-6)

In order to characterize the supply of gravel to downstream reaches and to assess or predict the effects of gravel removal, it is necessary to understand how sediment is produced and transported and how it interacts with river-channel morphology. This part summarizes the following influences on river channel geomorphology.

Processes of basin sediment production are reviewed (p.2-3) because the location and manner in which sediment is contributed to rivers influences the amount and durability of gravel supplied to downstream reaches. A combination of observation and measurement in the field and on aerial photographs may be used to identify, locate, and quantify sediment sources, and to define how they change through time and as a result of changes in land use.

Processes by which sediment is transported along rivers and the controls on those processes are summarized (p.3-4). Most material within the bed of gravelly rivers is transported as bedload, which accounts for a relatively small proportion of the total load of most rivers. Most material is typically transported during high flows which occur on only several days per year.

The location and behavior of the depositional reaches of rivers typically exploited for gravel are explained in light of the downstream reduction in channel gradient and transporting ability, and resulting gravel bar deposition (p. 4-5). A combination of field sampling, field observations, and analysis of archival materials, such as aerial photographs, maps, and survey data, can be used to characterize the patterns of sediment transport and deposition and of changes in channel morphology. The same approach may be used to determine the effects of various land and channel uses on downstream patterns of sediment transport and channel morphology.

Processes of bedload transport, gravel-bar accretion, floodplain formation, and channel migration at river bends are summarized (p. 5). Methods for estimating bedload transport are reviewed. The report stresses that each approach must be applied only under the conditions for which it is valid, that it is desirable whenever possible to use several different methods, and that it should almost always be possible to derive a usable estimate of transport in a given river (p.6-7). Equations for bedload transport can be useful if carefully employed, but the results should always be checked against some independent field evidence.

Attachment E

Land Reclamation Statute References to Gravel Mining

Declaration of policy:
444.762. It is hereby declared to be the policy of this state to strike a balance between surface mining of minerals and reclamation of land subjected to surface disturbance by surface mining, as contemporaneously as possible, and the conservation of land, and thereby to preserve natural resources, to encourage the planting of forests, to advance the seeding of grasses and legumes for grazing purposes and crops for harv3est, to aid in the protection of wildlife and aquatic resources, to establish recreational, home and industrial sites, to protect and perpetuate the taxable value of property, and to protect and promote the health, safety and general welfare of the people of this state.

A permit is required:
444.770. 1. It shall be unlawful for any operator to engage in surface mining without first obtaining from the commission a permit to do so, in such form as is hereinafter provided, including any operator involved in any gravel mining operation where the annual tonnage of gravel mined by such operator is less than five thousand tons.

Political subdivisions are exempt from the permit:
444.770. 5. Notwithstanding the provisions of subsection 1 of this section, any political subdivision which uses its own personnel and equipment or any private individual for personal use may conduct in-stream gravel operations without obtaining from the commission a permit to conduct such an activity.

A permit fee is required:
444.772. 4. .... For any operator of a gravel mining operation where the annual tonnage of gravel mined by such operator is less than five thousand tons, the total cost of submitting an application shall be three hundred dollars....

An annual renewal fee is required:
444.772. 7. .... For any operator involved in any gravel mining operation where the annual tonnage of gravel mined by such operator is less than five thousand tons, the permit as to such acreage shall be renewed by applying on a permit renewal form furnished by the director for an additional permit year and payment of a fee of three hundred dollars...

A plan of reclamation, operation or conservation is required:
444.772. 9. The application for a permit shall be accompanied by a plan of reclamation that meets the requirements of sections 444.760 to 444.790 and the rules and regulations promulgated pursuant thereto, and shall contain a verified statement by the operator setting forth the proposed method of operation, reclamation, and a conservation plan for the affected area including approximate dates and time of completion, and stating that the operation will meet the requirements of sections 444.760 to 444.790, and any rule or regulation promulgated pursuant to them.

The Commission may impose requirements:
444.774.1. Every operator to whom a permit is issued pursuant to the provisions of sections 444.760 to 444.790 may engage in surface mining upon the lands described in the permit upon the performance of and subject to the following requirements with respect to such lands: (12) Such other requirements as the commission may prescribe by rule or regulation to conform with the purposes and requirements of sections 444.760 to 444.790.

A reclamation bond is required:
444.778. 1. .... For any operator involved in any gravel mining operation where the annual tonnage of gravel mined by such operator is less than five thousand tons, such operator shall deposit a bond with the commission in the penal sum of five hundred dollars for each acre or portion thereof of land proposed thereafter by the operator to be subjected to surface mining for the mining permit year.